

Yuchen You

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Education

- 2024–Present **University of Michigan, Ann Arbor, MI, US**,
B.S.E in Computer Science - GPA 3.94/4.00.
- 2022–2024 **Shanghai Jiao Tong University, Shanghai, China**,
B.S.E in Mechanical Engineering - GPA 3.83/4.00.

Research Experience

- May 2025–
Ongoing **Agentic Distributed System Ops**, ORDER LAB, DEPT. OF CSE, Advisor: Ryan (Peng) Huang,
UNIVERSITY OF MICHIGAN.
- Built an **agent-based auto-mitigation** prototype for common distributed failures (overload, network faults).
 - Evaluated on **ZooKeeper**; integrated **Prometheus** metrics and mitigation via **HAProxy**, **Resilience4j**, etc., ChaosBlade and Kazoo fault injection.
 - Automated reproduce→metrics of failure→mitigate loop→metrics of recovery.
- Sept. 2024–
Ongoing **SoftRobot Electronic Control**, HDR LAB, DEPT. OF ROBOTICS, Advisor: Xiaonan (Sean) Huang,
UNIVERSITY OF MICHIGAN.
- Developed motion planning, state estimation, and pose rendering for modular soft-robotic arm sections.
 - Led STM32 & Orange Pi control stack (C++/Rust): dynamics/PID, CAN/I²C, inter-MCU networking; contributed to PCB design.
 - Integrated Python (PyTorch, ResNet) for model optimization; industry collaboration with General Motors.
 - Demos/extended abstracts: ICRA 2025 Workshop (Atlanta, **Best Poster**), RoboSoft 2025 Workshop (Lau-
sanne), ICON 2025 (Purdue).
- Feb. 2024–
Sept. 2024 **Control Developer**, SIRIUS LAB, SHANGHAI JIAO TONG UNIVERSITY, Advisor: Yutong Ban.
- Objectives: Use the LLM and the Flexiv 7 DOF Robot Arm with ZED Depth Camera to handle natural language input and solve daily tasks like solve the jigsaw puzzles.
 - Lead the robotic arm control algorithm design, basing on the Flexiv-RDK frame, use the reverse/forward kinematic solution to make fluent control of the 7 DOF manipulator to handle accurate motion.
 - Combining simulation data and path planning into control flow

Selected Projects

- Jan. 2025 –
Apr. 2025 **Simulated Basic Operating System, EECS482 (Introduction to Operating System) Lecture Project.**
- **Thread Concurrency Library:**
 - Built a lightweight user-level multicore threading library (swapcontext/makecontext): lifecycle, Mesa Monitors sync (mutex/condvar/spin), interrupts/core-suspend, non-preemptive FIFO run queues.
 - **Pager & MMU:**
 - Minimal pager (SWAP/FILE-backed); manages page tables and dirty/reference/recident bits.
 - Page-fault path: clock queue eviction, copy-on-write, defer-and-avoid; supports fork/mmap/yield.
 - **Network File System:**
 - Built an inode-based, Unix-style NFS with strong consistency under concurrent access.
 - Synchronized file ops (create/read/write/delete) using Boost shared/upgrade/unique locks; added robust error handling.

- Jan. 2025 – **Network Simulation with Mininet, EECS489 (Introduction to Computer Networks) Lecture Project.**
- Apr. 2025
- **Mininet Topology & Performance Measurement:**
 - Simulate the `iperf` instruction. Built custom Mininet networks and measured RTT/throughput with C++ socket library.
 - **Video Proxy & Adaptive Streaming:**
 - Simulated a video-server proxy using `select/poll`.
 - Implemented round-robin load balancing for client request distribution.
 - Developed DASH support for adaptive bitrates based on client network conditions.
 - **Transport-Layer Algorithm Emulation:**
 - Emulated TCP sliding window over UDP.
 - Implemented Go-Back-N and Selective Repeat strategy with both cumulative and selective acknowledgments.
 - **L3 Router Simulation:**
 - Simulated a multi-interface Ethernet router with ARP cache.
 - Handled ICMP echo request/reply.
 - Implemented simple intra-domain routing logic.
- Jan. 2025 – **Digital Forensics, EECS 388 (Introduction to Computer Security) Lecture Project..**
- Apr. 2025
- **Cryptanalysis & Cracking:** length-extension, padding-oracle; John the Ripper (PDF/ODT), Hydra (SSH).
 - **Web Exploitation:** auth bypass via XSS/SQLi/CSRF.
 - **Binary Exploitation:** ROP/NOP-sled against DEP/ASLR.
 - **Reverse Engineering:** Ghidra decompilation and PWNing.
 - **Steganography:** hidden-data detection (binwalk, Stegseek, exif check).
 - **Protocols:** TLS 1.3 handshake; Google-style TOTP.
- Sept. 2024 – **Origami Inspired Soft Robotic Arm: A Modular Design Platform for Manipulation, HDR Lab, Dept. of Robotics, University of Michigan.**
- Ongoing
- Design Kresling origami and pneumatic-actuation workflow and control algorithms for a confined-space soft robotic arm.
 - Led STM32 and Orange Pi firmware development (dynamics, PID, CAN/I²C communication).
 - Implemented core algorithms in C++ and Rust; collaborated on PCB hardware design.
- 2023–2024 **Auto Sentry Robot Control, Chinese Univ. National Robot Competition – Robomaster Championship.**
- Autonomous decision making and engagement with dual gimbals and 4-wheel chassis on STM32-F407.
 - Lead circuit design; dual-gimbal control stabilization; high-speed 4-wheel chassis response.
 - Developed CAN/UART pipelines for CV and LiDAR data; implemented IMU-based absolute-pose control.

Skills

Programming	C/C++, Java, Rust, Golang, Python, Bash; Git; CMake, Makefile, Maven, uv, cargo
Systems	Arch/Ubuntu Linux; concurrency (boost locks); MMU/paging; POSIX sockets (select/poll)
Networking	tc(config); HAProxy; Mininet; TCP (GBN/SR), L3 routing
Distributed	Docker (Compose), Kubernetes; ZooKeeper, HDFS; Prometheus+Grafana (JMX Exporter)
Reliability	Resilience4j; ChaosBlade
Security	Wireshark, Ghidra, John the Ripper, Hydra, sqlmap, Autopsy, Stegseek; ROP chains
ML	PyTorch
Databases	SQLite, Oracle(SQL*Plus)
Robotics	STM32, FreeRTOS; CAN/I ² C; Flexiv RDK; PID/dynamics; C++/Rust firmware, MATLAB
Other	JavaScript, HTML, Markdown, L ^A T _E X; Neovim (LSP via Mason), SSH, tmux, GDB/LLDB

Honors & Awards

- May 2025 **ICRA Workshop Best Poster Award.**
- Jun. 2024 **Cheng-Family Scholarship.**
- May 2024 **RoboMaster University Championship (Eastern Region Champion).**
- Apr. 2024 **RoboMaster University League (National Champion).**
- Nov. 2023 **University Physics Competition (Silver Prize).**
- Dec. 2023 **SJTU Excellence Scholarship, Level B.**
- Nov. 2023 **Wu Jiong Sun Jie Sunshine Scholarship.**
- Aug. 2023 **RoboMaster University Championship (National Champion).**

Aug. 2023 **SJTU Social Practice, Third Prize.**

Extra Curriculars

- May 2025- **Undergraduate Research Assistant** at University of Michigan College of Engineering, MI, May 2025
Ongoing
- 2025 **Volunteer** at IEEE International Conference on Robotics and Automation (ICRA), Atlanta, GA, May 2025
- 2024 **Teaching Assistant** at Shanghai Jiao Tong University, ENGR 1000J (Introduction to Software Engineering)
- 2023 UM-SJTU Joint Institute Youth Volunteer Team member (Shanghai, China).
- 2023 Old Friends Youth Team, Shanghai, Facilitated intergenerational communication activities.

Personal Details

- Language English (TOEFL 106/120), Chinese (Native)
- Hobbies Badminton, Playing Rubik's Cube, Linux Rice/Customization (especially Arch Linux + Hyprland + NeoVim + Fcitx5), MOBA Games (HOK)